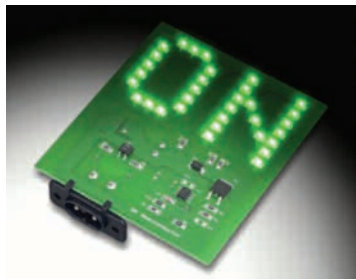


ON Semiconductor®



LED Driver Solutions

ON Semiconductor offers solutions for a wide range of LED applications whether run off an AC main or battery powered. With a broad portfolio of LED driver solutions, ON Semiconductor address everything from LCD backlighting, flashlights, wide DC-input range of applications, including automotive, solar powered, and commercial/landscape lighting powered from 12V DC/AC, to offline applications such as lighting ballasts and power factor correction solutions.



NCP1216 in non-isolated LED driver configuration

Features ▶

- Linear and switching topologies
- Wide-input DC-DC solutions to 40V
- Extended temperature range from -40°C to +125°C
- Optimized portable backlighting solutions
- Broad choice of packages

Benefits ▶

- Enhanced designer flexibility
- Suitable for automotive environment
- Robust and highly reliable
- Low passive parts count
- Demo boards and application notes available

Applications ▶

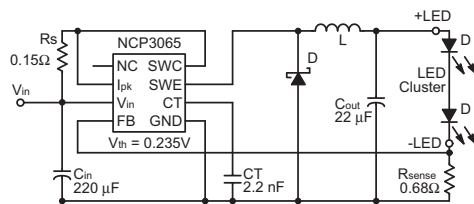
- Backlighting (small to medium LCD panels)
- Flashlights (torch and camera flash)
- Transportation (interior/exterior lighting, displays, and marine)
- General lighting (architectural, landscape, streetlighting, task lighting, and low-voltage AC/DC)
- Signage (LED ballasts)

Product Specifications ▶												
Part Number	Type	Dimming Type	Number of LEDs/String	Number of Strings	Configuration	Input Voltage (VDC)	Output Voltage (VDC)**	Output Current (mA)	Peak Efficiency (%)	Diagnostic Capabilities*	Interface	Markets
NCP3065	Boost or buck	PWM/analog	NA	NA	Series	3-40	40	NA	89	TSD	Enable control	CL TR BL
NCP/NCV3063		PWM/analog	NA	NA	Series	3-40	40	NA	89	TSD	Enable control	CL TR BL
CS51411	Buck	PWM/analog	NA	NA	Series	4.5-40	37	NA	93	TSD	Enable	CL TR BL
NCP1013	Fixed frequency flyback	PWM/analog	NA	NA	Series	85-265 VAC	50	NA	83	TSD/OVP/SS/UVLO	NA	CL SI
NCP1014		PWM/analog	NA	NA	Series	85-265 VAC	50	NA	83	TSD/OVP/SS/UVLO	NA	CL SI
NCP1028		PWM/analog	NA	NA	Series	85-265 VAC	50	NA	83	TSD/OVP/SS/UVLO	NA	CL SI
NCP1216		PWM/analog	NA	NA	Series	85-265 VAC	Depends on V _{IN}	NA	90	OCP/UVLO/TSD	NA	CL BL SI
NCP1351	Variable OFF time flyback	PWM/analog	NA	NA	Series	85-265 VAC	Depends on V _{IN}	NA	90	OCP/UVLO/TSD/OPP	NA	CL BL SI
NUD4001	Linear	PWM/analog	NA	NA	Series	3.6-30 and 60 for load dump	27	NA	NA	NA	Enable	CL TR BL SI
NUD4011		PWM/analog	NA	NA	Series	5-200	198	NA	NA	NA	Enable	BL

MARKETS LEGEND: CL COMMERCIAL LIGHTING FL FLASHLIGHTS TR TRANSPORTATION BL BACKLIGHTING SI SIGNAGE

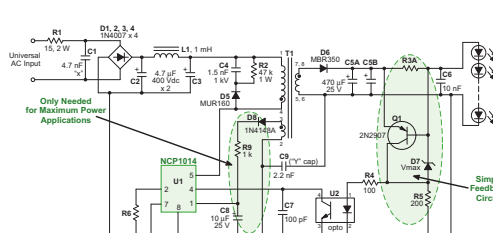
*Diagnostic capabilities: TSD: Thermal shutdown

**Switch current

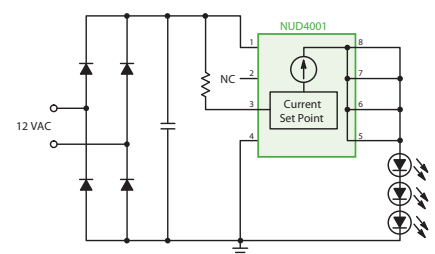


Typical Buck Application Circuit

NCP3065 LED driver—buck configuration



NCP1014 configured as a constant current isolated offline LED driver



NUD4001 in 12 VAC-powered application

LED Driver Solutions for Handheld Applications



Portable applications require solutions that provide high efficiency, require minimal board space, and low height. ON Semiconductor offers LED driver solutions in linear, charge pump, and inductive DC-DC converter topologies for optimal space savings and inductive solutions for optimal power efficiency. In addition, ON Semiconductor offers a broad selection of high-current drivers to support flashlight and camera flash applications.

Features ▶

- Linear, inductive, and charge pump solutions
- High efficiency
- Highly integrated solutions
- Ultra-thin micro package 0.55 mm
- Simple to use

Benefits ▶

- Enhanced designer flexibility
- Extended battery life
- Low overall parts count
- Thinner and smaller end products
- Demo boards and application notes available

Applications ▶

- Small and medium size LCD backlighting
- Keyboard backlighting
- Flashlights, torch, and headlamps
- Camera flash
- Medical instruments



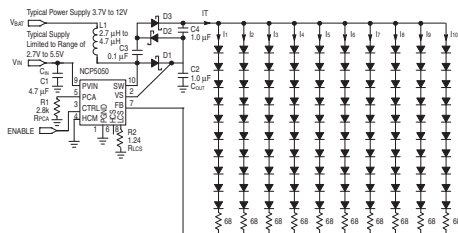
NCP1400A powered LED flashlight

Product Specifications ▶												
Part Number	Type	Dimming Type	Number of LEDs/String	Number of Strings	Configuration	Input Voltage (VDC)	Output Voltage (VDC)**	Output Current (mA)	Peak Efficiency (%)	Diagnostic Capabilities*	Interface	Markets
NCP5050	Boost	PWM/analog	NA	NA	Series	2.7-5.5	22	NA	90	Timeout/ OVP/TSD	Enable	BL FL
NCP5030	Buck-boost	PWM/analog	NA	NA	Series	2.7-5.5	5.5	NA	94	OVP/TSD/UVLO	Enable	FL
NUD4301	Linear	PWM/analog	NA	NA	Parallel	2.7-6.0	5.7	NA	NA	NA	Enable	BL
NCP1400A	Boost	PWM/analog	NA	NA	Series	0.8-5.0	5.0	NA	89	SS	Enable	FL
NCP1406		PWM/analog	NA	NA	Series	1.8-5.5	25	NA	85	TSD/UVLO/SS	Enable	BL FL
NCP1422		PWM/analog	NA	NA	Series	1.0-5.0	5.0	NA	92	TSD/UVLO/SS	Enable	FL
NCP5005	Boost w/enhanced RFI immunity	PWM/analog	NA	NA	Series	2.7-5.5	21	NA	90	OVP/TSD	Enable	BL
NCP5010	Boost w/integrated Schottky	PWM/analog	NA	NA	Series	2.7-5.5	22	NA	84	OVP/TSD	Enable	BL
NCP5602	Charge pump	IC	NA	NA	Parallel	2.7-5.5	5.5	NA	88	OVP/TSD	IC	BL
NCP5603		PWM	NA	NA	Parallel	2.7-5.5	5.5	NA	90	TSD/SCP	Enable	BL FL
NCP5608		PWM	NA	NA	Parallel	2.7-5.5	5.5	NA	86	OVP/TSD	Enable	BL FL
NCP5612		S-wire link	NA	NA	Parallel	2.7-5.5	5.5	NA	88	OVP/TSD	Enable/dim	BL
NCP5623		IC	NA	NA	Parallel	2.7-5.5	5.5	NA	93	OVP/SCP	IC	BL
NCP5604A/B		PWM	NA	NA	Parallel	2.7-5.5	4.8	NA	87	OVP/TSD	Enable	BL

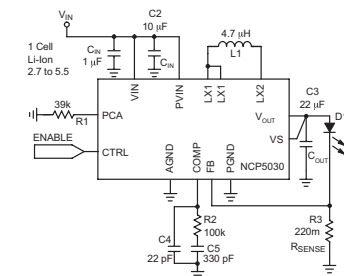
MARKETS LEGEND: BL COMMERCIAL LIGHTING FL FLASHLIGHTS TR TRANSPORTATION BL BACKLIGHTING SI SIGNAGE

*Diagnostic capabilities: TSD: Thermal shutdown

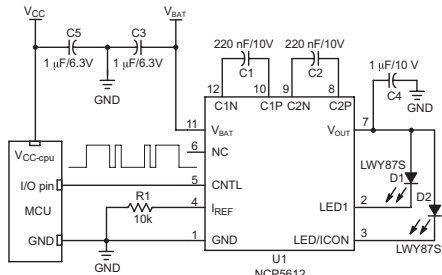
**Switch current



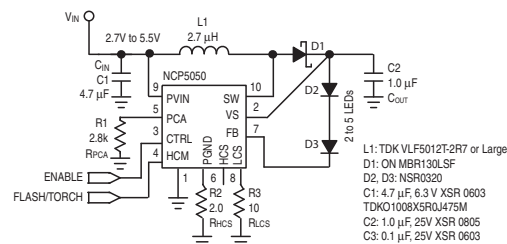
NCP5050 drives 10 x 10 LED for backlighting medium-size LCD panel



NCP5030 3-cell alkaline flashlight schematic



NCP5612 2 LED charge pump application schematic



NCP5050 driving 2 to 5 HB-LEDs in flashlight